

TO THE HOMEOWNER

Congratulations! You have purchased one of the most cost effective energy saving products available. Your heat recovery unit (HRU) is designed to assist in the heating of your domestic hot water by using the wasted heat from your air-conditioner. As an additional benefit, the HRU will also improve the efficiency of your air-conditioner while it is operating.

Your HRU requires very little maintenance and no lubrication. It is designed to automatically turn on when the air-conditioner is running, and turn off when the air-conditioner shuts off, or the hot water reaches 140° F. If the HRU is outside and the electricity will be off during freezing weather, the unit should be drained. With a heat pump air-conditioner, the HRU will also warm water in the heating cycle. In the hot summer weather, it can heat up to 6 gallons of water per ton of A/C per hour; as hot as 120° F to 140° F. When the air-conditioner is running, the HRU normally circulates your water at a rate of 20 to 60 gallons per hour and heats it 10° F to 35° F with each pass; depending on the water temperature, air-conditioner and ambient temperature. We suggest you have the HRU checked at the start of each cooling season by an air-conditioning specialist.



A Division Of Trevor-Martin Corporation

INSTALLATION INSTRUCTIONS FOR HEAT RECOVERY UNITS

AMERICAN EQUIPMENT SYSTEMS HEAT RECOVERY UNITS

INSTALLATION INSTRUCTIONS

GENERAL

The heat recovery unit (HRU) is a water heating device designed to utilize the normally wasted heat from air conditioning or refrigeration equipment. The unit works by pumping cold water, from the water tank, to the HRU, where the heat exchanger transfers heat from the refrigerant to the domestic hot water.

OPERATION

The HRU is driven by a direct drive water cooled circulator with a bronze base.

- The pump electrical circuit is controlled by one or two pipe mounted thermostats. The thermostats have to be closed for the pump to run. If equipped, the hot refrigerant thermostat will close when the leaving refrigerant reaches a temperature of 125° F. This thermostat is designed to prevent condensation of the refrigerant and it will remain closed as long as the leaving refrigerant is above 115° F. The water thermostat is mounted on the "water in" copper tube and will turn off the pump circuit once the incoming water reaches 140° F. Some models are also equipped with a hot water mixing valve that recycles water through the HRU Heat Exchanger until it reaches a preset delivery temperature, generally 120°F. This feature is particularly useful for installations with high efficiency air conditioners, where refrigerant temperatures are generally lower.

INSTALLATION

PERFORM THE FOLLOWING STEPS WHEN INSTALLING THE HEAT RECOVERY UNIT:

5. Check National and Local Building and Electrical Codes for special installation requirements.
6. Where the ambient temperatures will drop below 32° F.
 - A. Provide a means to completely drain the (HRU).
 - B. Wire the HRU pump to the line side of the compressor contactor, so that the pump can run whenever the water temperature drops below 48° F. Models with (F) designation on the model number have the freezestat built in.
7. The unit should be mounted in the vertical position with the tubes down.
8. Check the air conditioning or refrigeration equipment to see that it is functioning within the manufacturer's recommended specifications. If the equipment is found to be defective in any manner, DO NOT PROCEED until repairs are made.

5. TURN OFF ALL POWER to the air conditioning or refrigeration equipment.

6. Remove air conditioner refrigerant gas and cut the hot gas line, as close as practical to the compressor, or before the reversing valve. For units with external mufflers, cut the hot gas line after the muffler.
 7. Braze properly sized refrigerant tubing (SEE PIPING TABLE) to and from the compressor discharge line to the stubs marked "Refrigerant-In" and "Refrigerant-out" on the HRU.
 8. When cutting into the air conditioning cabinet:
 - A. DO NOT cut into the control box.
 - B. Use protective bushings in the sheet metal holes.
 - C. Insulate all interconnecting tubing with a 3/8" thick Armafлекс/Rubatex or equivalent insulation, suitable for 200° F. exposure.
 9. Installation of a standard liquid line filter-dryer is recommended.
 10. Evacuate and recharge refrigerant system to manufacturer specification; adding one ounce for the HRU and 1 ounce for each 10 feet of copper tubing added during installation. **(DO NOT RUN OR ADD WATER TO THE HRU UNTIL THE AIR CONDITIONING IS OPERATING SATISFACTORILY.)** Having water in the heat exchanger when charging the air conditioner could cause overcharging of the refrigerant.
 11. Turn off the power and water supply to the water tank (if gas, turn off the gas).
 12. Drain the water tank, if necessary.
 13. Run two water lines from the water tank to the HRU. Use 1/2" O.D. copper tube line up to 80 feet and 5/8" above 80 feet. Place shut-off valves with drain in each line. Some HRU models are equipped with these valves.
- Place pressure relief valve between shut-off valves and HRU, unless the model is already so equipped. Connect lines to water tank in one of the three options shown on page 6 **(DO NOT PIPE DIRECTLY INTO THE HOT WATER LINE FROM THE TANK TO THE HOUSE).**

14. Turn on the water and fill the water tank. Allow the air to escape through an open faucet. Check for leaks.

15. The HRU pump is NOT self-priming; therefore, all of the air must be removed from the water lines in order for the circulating pump to work. If you choose to install your HRU without the use of drain valves, you must use an alternate method for purging the water lines.
16. Set water heater tank thermostats as follows
- Double Element Electric: Upper element at 125° F and the Lower element set at minimum value.
 - Single Element Electric (gas or oil): 125° F.
17. Wire the HRU according to local and national codes using the electrical schematic as a guide. The power supply should be #14 wire run through armored cable or rigid conduit; and a positive ground provided. Turn on the power to the water tank (if gas, follow manufacturers instructions for re-lighting) and the air conditioning or refrigerant equipment. The pump will start once the Refrigerant thermostat closes at 125° F (if so equipped). On small tonnage equipment, it may take up to 5 minutes for the Refrigerant line to heat up enough to close the thermostat. Once the pump starts, verify water circulation to the tank by checking the temperature difference between the "Water-In" and the "Water-Out" lines. The "Water-Out" line should be at least 10° F warmer. If the pump runs, but no hot water is produced, purge the water lines; the pump is probably air locked. The installation should now be working properly, and saving energy every time your A/C runs.

Remote Waste Heat Recovery Unit

Recommended Piping – R-22

Table A: Recommended MAXIMUM LINEAL FEET of hot gas line (each way) between condensing unit or compressor and heat recovery unit.

Cooling Capacity, BTU/Hr.*	3/8	1/2	5/8	3/4	7/8
18,000	6	26	30	-	-
24,000	-	16	30	-	-
30,000	-	11	30	-	-
36,000	-	9	25	30	-
42,000	-	6	18	30	-
48,000	-	5	13	30	-
54,000	-	-	11	28	30
60,000	-	-	9	25	30
72,000	-	-	7	20	30

*Standard ARI rating, air conditioner or heat pump. Where rating falls between two values, use recommendations for higher value. In no case reduce existing discharge line used by manufacturer of A/C or heat pump.

NOTE: For lengths greater than those covered in table A – Consult HRU Manufacturer.

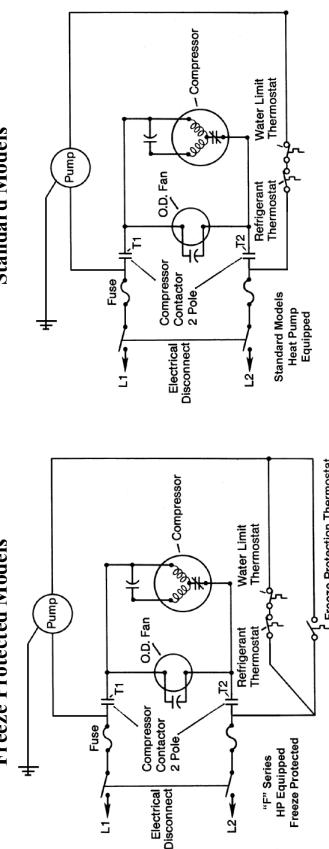
Fitting Losses in Equivalent Feet of Pipe

Table B: Using smooth bend elbows.

Nominal Pipe or Tube Size (in.)	90° Std.	90° Long Radius	90° Street	45° Std.	45° Street
3/8	1.4	0.9	2.3	0.7	1.1
1/2	1.6	1.0	2.5	0.8	1.3
3/4	2.0	1.4	3.2	0.9	1.6

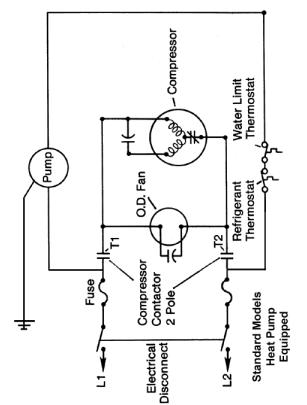
Wiring Diagrams

Fuse Protected Models



Standard Models
Hot Pump Equipped

Standard Models



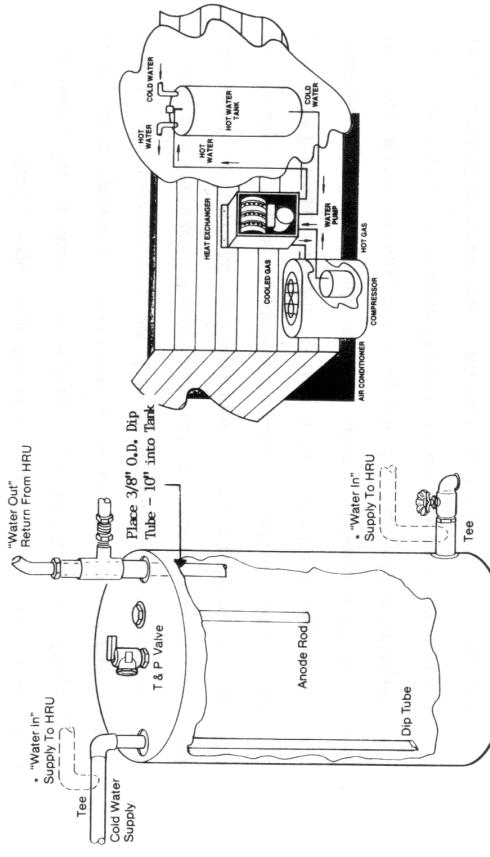
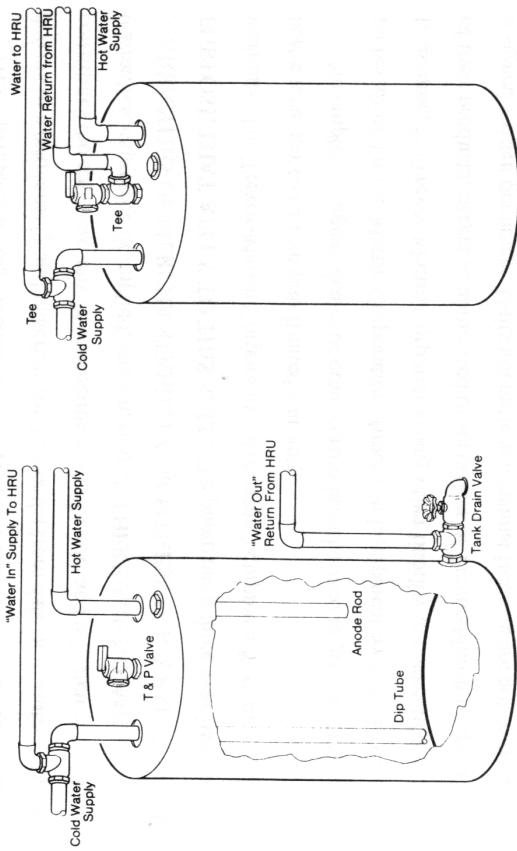
Standard Models
No Hot Pump

LIMITED WARRANTY

ALL AMERICAN EQUIPMENT SYSTEMS products are warranted against defects in workmanship and materials for 12 months from date of manufacture. This constitutes the only warranty in connection with this sale, and is in lieu of all other warranties, expressed or implied, written, or oral. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE THAT APPLY TO THIS SALE. The pump has a three year limited warranty. The Trevor-Martin Corporation, American Equipment Systems Division, heat exchanger has a five year limited warranty. No employee, agent, dealer or other person is authorized to give any warranties on behalf of Trevor-Martin Corporation, American Equipment Systems Division, nor to assume, for Trevor-Martin Corporation, any other liability in connection with any of their products, except as authorized by an officer of Trevor-Martin Corporation, in a signed written document. Units not protected against freezing are not warranted.

LIMITATION OF REMEDY

Trevor-Martin Corporation, American Equipment Systems Division, will replace or repair, at Trevor-Martin Corporations option, F.O.B. Factory, freight prepaid, any American Equipment Systems product, found defective in workmanship or material if such product is returned to our plant, freight paid, within 12 months of date of manufacture. It is agreed that such replacement or repair is the exclusive remedy available from Trevor-Martin Corporation, American Equipment Systems Division. Should any of our products prove to be defective, Trevor-Martin Corporation, American Equipment Systems Division, is not liable for damage of any sort whatsoever, including incidental and consequential damages. Product returns, under the terms of this warranty, must be approved by Trevor-Martin Corporation, American Equipment Systems Division. Products or parts thereof replaced or repaired under the conditions of this warranty will be returned, transportation charges prepaid within the United States, by best and most economical means.



*Either Supply To HRU May Be Used

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